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" " Noise abatement*

Adopted by City Council, Resolution No. 75-188  
July 8, 1975

# noise element

of the general plan

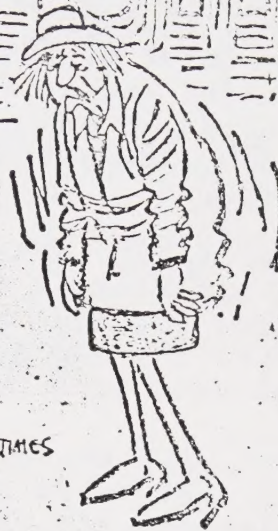
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# NOISE POLLUTION



INTERLANDI © 1974, LOS ANGELES TIMES

"No wonder modern life is so hectic... it's so damned noisy!"

## PRELIMINARY DRAFT OF THE NOISE ELEMENT

### OUTLINE

#### I Summary and Introduction

#### II Perception

- a. Scales used.
- b. Limits and acceptable levels of noise.

#### III Analysis

- a. Noise contour map - reading locations.
- b. Noise contour maps - and interpretation.
- c. Identification of problems and potential.
- d. Interrelationships.

#### IV Goals, Objectives, Policies

#### V Implementation

#### VI Appendix

### PART II

#### EIR Draft



Noise is not recognized as a new problem. Through time noise abatement activities have been made law to protect the living environment. In ancient Rome chariots were restricted from city streets and goods could not be transported by horses at night in order to reduce noise during that critical period. Western cultures have through time attempted to abate noise in order to provide suitable living environments. In spite of some efforts, mostly uncoordinated, noise pollution has tended to increase with the passing of time.

Engine powered vehicles can be designed and developed or modified to operate about as quiet or noisy as the user demands. Noise from transportation facilities increases as traffic increases, but not on a one to one ratio. Noise is an especially serious problem to land uses adjacent to primary transportation facilities such as freeways, airports, and railroad yards.

As a consequence of the continuing concern for a decent home and a suitable living environment this element is designed to identify potential problem areas for special consideration and to establish a methodology for recognizing and giving careful consideration to noise problems through good land use planning techniques.

The Noise Element will eventually be incorporated into the Claremont General Plan and will serve as one of the tools for planners, administrators, legislators, and the general public at large in order to be cognizant of noise. By use of the Noise Element and its inherent policies, noise impacts of existing noise generators should be lessened and future noise generators should be developed and located in a manner consistent with the policies identified by Council Resolution 74-105.

The Element identifies the characteristics of noise and inherent problems, issues, and opportunities that should be considered in a development guide and noise control program. The Element identifies goals, objectives, and policies with which to guide future development, both public and private. Recommendations are made in the Element which, if implemented, will tend to lower the ambient noise level within the Claremont sphere of influence thus having a direct beneficial impact on one facet of the quality of life enjoyed by the City's residents.



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INTRODUCTION

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The purpose of this Element is to recognize noise as being one of the key features that determine the quality of the environment; and once having recognized this, to provide for a minimum amount of disturbance from this pollutant through the planning process.

Citizens of this nation are becoming increasingly aware of the importance of noise on the quality and livability of their neighborhoods.

The primary source of noise pollution affecting Claremont stems from the various modes of transportation. Claremont has few significant areas of land now utilized for non-residential uses. The City is presently divided by major east-west arterial highways and major north-south thoroughfares to the extent that few areas of the city are not now impacted by noise from engine powered transportation vehicles. It is this noise from transportation facilities which is of primary concern to this Element.

There are noise generators without the City of Claremont that add to the ambient level of noise and to the annoyance level of the City's residents. No airports are presently located within the municipal limits of the City. Noise impacts are presently realized from small aircraft using Cable Airport in Upland to the east, and Brackett Field in LaVerne to the southwest. Claremont is also under the established flight pattern of Ontario International Airport in the City of Ontario to the southeast. Also from Ontario International Airport are occasional military flight operations which add to noise problems in this region. There are occasional overflights from the Pomona Police Department helicopters which add to the ambient noise level in the City of Claremont, and, finally, occasional drag strip and auto racing operations occur at the County Fairgrounds in Pomona which have an impact on residences in the City of Claremont.



Included among the requirements of the Noise Control Act of 1972 was a directive that the Administrator of the U. S. Environmental Protection Agency must, among other things, develop and publish criteria with respect to noise. Subsequent to development of this criteria the Administrator must publish information on the levels of environmental noise requisite to insure the protection of public health and welfare with an adequate margin of safety.

All of the scientific study and work that is required for basing levels of environmental noise on precise objective factors has not been completed. Information has been secured from the EPA which is based upon "analysis, extrapolations and evaluations of the present state of scientific knowledge."

After a great deal of research and study, levels of sound have been identified for a relatively large number of situations which appear to be the maximums permissible to protect the health and welfare of the general public. The following table identifies the permissible maximum sound levels. To identify these sound levels, certain considerations and hypothesis were made and are listed here.<sup>1</sup>

1. In order to best describe the effects of environmental noise in a simple, uniform, and appropriate way, the best descriptors are the long-term equivalent A-weighted sound level ( $L_{eq}$ ) and a variation with a night-time weighting, the day-night sound level ( $L_{dn}$ ).
2. For protection against hearing impairment:
  - a. The human ear, when damaged by noise, is typically affected first at a frequency of 4000 Hz.
  - b. Changes in hearing level of less than 5 dB are generally not considered noticeable or significant.
  - c. One cannot be damaged by sounds considered normally audible, which one cannot hear.
  - d. Protecting the population up to a critical percentile (ranked according to a decreasing ability to hear) will also protect those above that percentile, thereby protecting virtually the entire population.
3. For identification of levels requisite to protect against activity interference:
  - a. Annoyance due to noise, as measured by community surveys, is the net consequence of activity interference.
  - b. Of all the various kinds of activity interference, speech interference is the one that is most readily quantifiable.

(1) footnote the EPA report bibliography part 1 #17



People do not perceive noise in direct proportion to the loudness or sound level. Since a decibel, the measure of loudness, is a logarithmic function, addition or subtraction cannot be done in a simple straight line fashion. In this respect the measure of loudness is not unlike the measure of intensity of an earthquake. Because of this logarithmic nature doubling sound power of any source will result in a decibel increase of only 3 dB(A). A-weighted scales are commonly utilized because the human ear does not respond equally to all frequencies. In order to measure a range of frequencies approximating the ear's response it is necessary to artificially "weight" or reduce the effects of high and low frequencies with respect to the medium frequencies. Sound level meters have A-weighting networks for measuring noise. The resultant readings are identified as dBA, the method utilized in this Element.

There are various noise rating scales that are used in assessing the impact of noise. The basic noise measuring scale is the A-weighted sound pressure level (dBA). This A-weighted scale closely approximates the frequency response of the human ear. There are now five relatively common scales utilizing the dBA scale as a base for modification in their use. These scales are;

1. A-Weighted Sound Level, dBA - The A-weighted sound level gives greater weight to the frequencies of sound to which the human ear is most sensitive, primarily the middle frequencies. Sound level measurements in dBA are used in almost all measurement scales which are used to describe noise that affects people.
2. L<sub>10</sub> Statistical A-Weighted Noise Level - The L<sub>10</sub> level represents the A-weighted noise level which is exceeded 10 percent of the time for which the noise is measured. This measurement scale is commonly utilized for the assessment of traffic noise. It represents the louder sound levels occurring during the measurement period. This same scale can be used for other levels, such as L<sub>50</sub>, which is the noise level which is exceeded 50 percent of the time, and so on.
3. Community Noise Equivalent Level, CNEL - CNEL is a measure of the cumulative noise exposure in the community, with greater weights applied to evening and nighttime periods. For CNEL calculations, day is defined as 7 A.M. to 7 P.M. with a weighting factor of unity. Evening is 7 P.M. to 10 P.M. with a weighting factor of 3. Night is defined as 10 P.M. to 7 A.M. with a weighting factor of 10. Noise occurrences at night are given greater weight because noise at that time is more disturbing. CNEL is the scale used to measure the noise levels of commercial and general aviation airports.
4. Day-Night Average Sound Level, L<sub>dn</sub> - The day-night level is essentially the same as CNEL with the exception that the evening time period has been dropped and all occurrences during this 3-hour period are grouped into the daytime period. Noise contours developed by CNEL and L<sub>dn</sub> procedures will normally agree within 1 decibel, which is an indistinguishable difference. The L<sub>dn</sub> technique represents the evolution of CNEL in that this method provides computational simplification of an established rating scale with no significant loss of accuracy. L<sub>dn</sub> was chosen by the staff to be used by the noise consultant in the analysis and projection of noise levels within the Claremont planning area.



5. Other measurement scales have been used, especially for the description of airport noise. One is Noise Exposure Forecast (NEF). Another is Composite Noise Rating (CNR). All four scales (CNEL,  $L_{dn}$ , NEF, and CNR) can be converted from one to another with reasonable accuracy for planning purposes.  $L_{dn}$  was chosen for use in the Noise Element work because it has been recommended for nationwide use by a U. S. Environmental Protection Agency Task Force.



# PERCEPTION (Cont'd)

## SUMMARY OF NOISE LEVELS IDENTIFIED AS REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY

| Effect                                      | Level                   | Area                                                                                                                                                                  |
|---------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hearing Loss                                | $L_{eq(24)} \geq 70$ dB | All areas                                                                                                                                                             |
| Outdoor activity interference and annoyance | $L_{dn} \geq 55$ dB     | Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use. |
|                                             | $L_{eq(24)} \geq 55$ dB | Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.                                                                     |
| Indoor activity interference and annoyance  | $L_{dn} \geq 45$ dB     | Indoor residential areas                                                                                                                                              |
|                                             | $L_{eq(24)} \geq 45$ dB | Other indoor areas with human activities such as schools, etc.                                                                                                        |

SOURCE: E.P.A. "LEVELS OF ENVIRONMENTAL NOISE" MARCH 1974

Decibels are not linear units of measurement like gallons, feet, and pounds. Decibels are energy equivalents representative of points on a steeply rising curve. Calculation and addition of decibels is somewhat similar to seismic equivalents. Ten decibels is ten times more intense than one decibel. Twenty decibels is one hundred times more intense ( $10 \times 10$ ), thirty decibels is 1000 times more intense ( $10 \times 10 \times 10$ ) and so on. For illustration, one hundred decibels represents a level of sound energy 10 BILLION times more intensive than one decibel.

Adding particular decibel readings or levels then, must be accomplished logarithmatically. Adding 100 decibels to 100 decibels does not produce an intensity of two hundred decibels. Doubling sound power will increase sound energy only three decibels. Adding 100 dB to 100 dB, therefore, will produce an energy equivalent of 103dB. For adding one energy level to another the chart on page \_\_\_\_\_ should be used when the levels are not equal.



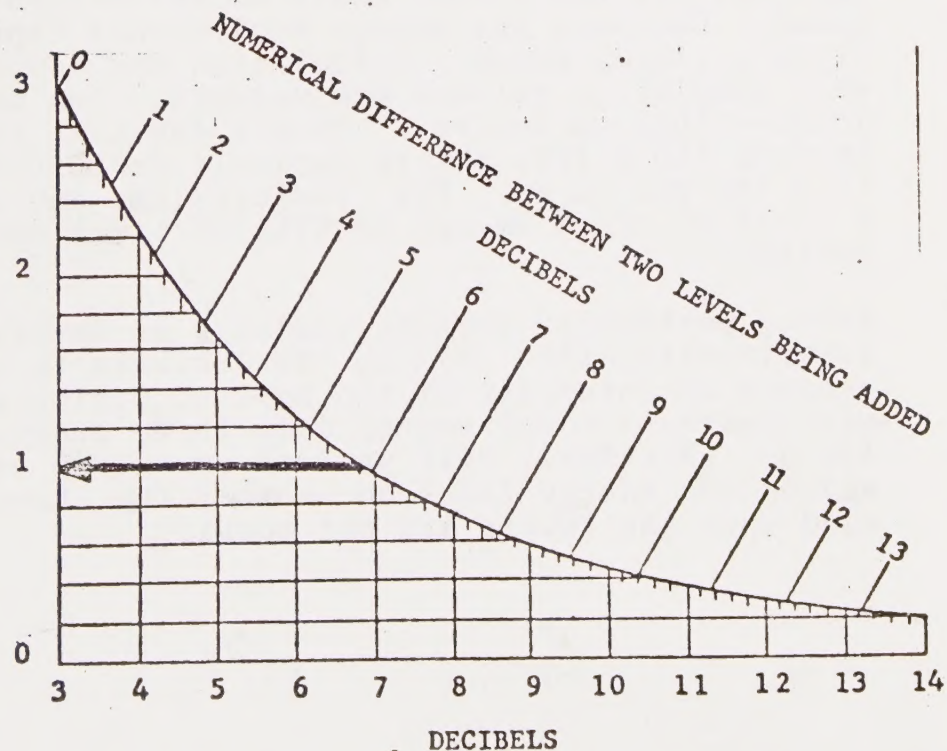
# SOUND LEVELS AND HUMAN RESPONSE

|                                 | 2NEL Level | Response                 | Hearing Effects                           |
|---------------------------------|------------|--------------------------|-------------------------------------------|
| Carrier Deck Job Operation      | 150        |                          | CONTRIBUTION TO HEARING IMPAIRMENT BEGINS |
|                                 | 140        | Painfully Loud           |                                           |
|                                 | 130        | Limit Amplified Speech   |                                           |
| Jet Takeoff (200 feet)          | 120        | Maximum Vocal Effort     |                                           |
| Discotheque                     |            |                          |                                           |
| Auto Horn (3 feet)              |            |                          |                                           |
| Riveting Machine                | 110        |                          |                                           |
| Jet Takeoff (2,000 feet)        | 100        |                          |                                           |
| Garbage Truck                   | 100        |                          |                                           |
| New York Subway Station         | 90         | Very Annoying            |                                           |
| Heavy Truck (50 feet)           | 90         | Hearing Damage (8 hours) |                                           |
| Pneumatic Drill (50 feet)       | 80         | Annoying                 |                                           |
| Alarm Clock                     | 80         |                          |                                           |
| Freight Train (50 feet)         | 70         | Telephone Use Difficult  |                                           |
| Freeway Traffic (50 feet)       | 70         |                          |                                           |
| Air Conditioning Unit (20 feet) | 60         | Intrusive                |                                           |
| Light Auto Traffic (100 feet)   | 50         | Quiet                    |                                           |
| Living Room                     |            |                          |                                           |
| Bedroom                         | 40         |                          |                                           |
| Library                         | 30         | Very Quiet               |                                           |
| Soft Whisper (15 feet)          | 30         |                          |                                           |
| Broadcasting Studio             | 20         |                          |                                           |
|                                 | 10         | Just Audible             |                                           |
|                                 | 0          | Threshold of Hearing     |                                           |

SOURCE: Environmental Protection Agency, Noise Pollution, August, 1973.

NUMERICAL DIFFERENCE BETWEEN TOTAL  
AND LARGER LEVEL

DECIBELS



NUMERICAL DIFFERENCE BETWEEN TOTAL AND SMALLER LEVELS

SOURCE: San Bernardino Co. Noise ELEMENT DRAFT, JULY 1974



Government Code Section 65302(g) requires a noise element of all city and county general plans as follows:

"A noise element in quantitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These shall include but are not limited to the following:

- (1) Highways and Freeways.
- (2) Ground rapid transit systems.
- (3) Ground facilities associated with all airports operating under a permit from the State Department of Aeronautics."

The guidelines also indicate the need for desired maximum noise levels by land use categories. The following table indicates the levels of environmental noise considered to be the maximum permissible and requisite to protect public health and welfare with an adequate margin of safety. The table classifies the various areas according to the primary activities that are likely to occur in each. One of the primary functions of this element is to provide a basis for judgment by the city decision-makers and the general public at large as a basis for setting standards. The procedure used for setting noise standards should use the information contained in this element, but in addition other relevant factors must be also utilized. These other factors include the necessary balance between costs and benefits associated with setting standards at particular noise levels, the nature of existing or projected noise problems in any particular area, the local aspirations and the means available to control environmental noise.

YEARLY AVERAGE EQUIVALENT SOUND LEVELS IDENTIFIED AS REQUISITE TO PROTECT THE PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY

| Measure                                            | Indoor                                           |                                     | Outdoor                                          |                                     |
|----------------------------------------------------|--------------------------------------------------|-------------------------------------|--------------------------------------------------|-------------------------------------|
|                                                    | Activity Interference Hearing Loss Consideration | To protect against both effects (b) | Activity Interference Hearing Loss Consideration | To protect against both effects (b) |
| Residential with outside space and Farm Residences | $L_{dn}$ 45<br>$L_{eq}(24)$ 70                   | 45                                  | 55<br>70                                         | 55                                  |
| Residential with no outside space                  | $L_{dn}$ 45<br>$L_{eq}(24)$ 70                   | 45                                  |                                                  |                                     |
| Commercial                                         | $L_{eq}(24)$ (a) 70                              | 70(c)                               | (a) 70                                           | 70(c)                               |
| Inside Transportation                              | $L_{eq}(24)$ (a) 70                              | (a)                                 |                                                  |                                     |
| Industrial                                         | $L_{eq}(24)(d)$ (a) 70                           | 70(c)                               | (a) 70                                           | 70(c)                               |
| Hospitals                                          | $L_{dn}$ 45<br>$L_{eq}(24)$ 70                   | 45                                  | 55<br>70                                         | 55                                  |
| Educational                                        | $L_{eq}(24)$ 45<br>$L_{eq}(24)(d)$ 70            | 45                                  | 55<br>70                                         | 55                                  |
| Recreational areas                                 | $L_{eq}(24)$ (a) 70                              | 70(c)                               | (a) 70                                           | 70(c)                               |
| Farm Land and General Unpopulated Land             | $L_{eq}(24)$                                     |                                     | (a) 70                                           | 70(c)                               |

Explanation of identified level for hearing loss: The exposure period which results in hearing loss at the identified level is a period of 40 years.

- Codes:
- a. Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity. (See Figure D-2 for noise levels as a function of distance which allow satisfactory communication.)
  - b. Based on lowest level.
  - c. Based only on hearing loss.
  - d. An  $L_{eq}(a)$  of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an  $L_{eq}$  of 60 dB.

\*Refers to energy rather than arithmetic averages.



The contour map on the following page, figure \_\_\_\_\_, represents the level of noise existing in the City of Claremont. It is important to note first that these contours are not, and should not be, considered discrete levels of sound. The actual hourly readings and equivalent averages for each measurement site can be found in the Appendix. The contours are presented in terms of a day-night level or  $L_{dn}$ . In this scale the night-time levels (10 p.m. to 7 a.m.) are weighted by an additional 10 dBA, reflecting a person's increased sensitivity to noise during this night-time period.

The reading locations are shown as circles with the  $L_{dn}$  measurement for that reading location noted within the circle. The noise contours are shown from a maximum of 80  $L_{dn}$  to a minimum of 55  $L_{dn}$  in five  $L_{dn}$  increments. The following contour map, therefore, represents over 600 hours of actual on-site measurements and does show the ambient level of noise now experienced on a typical day by residents within the City of Claremont.



Prior to assessing the environmental impact of the ambient noise level now experienced by residents of the City of Claremont and to assessing the environmental impact of the ambient noise on future land uses and their compatibility, it is necessary to establish meaningful standards.

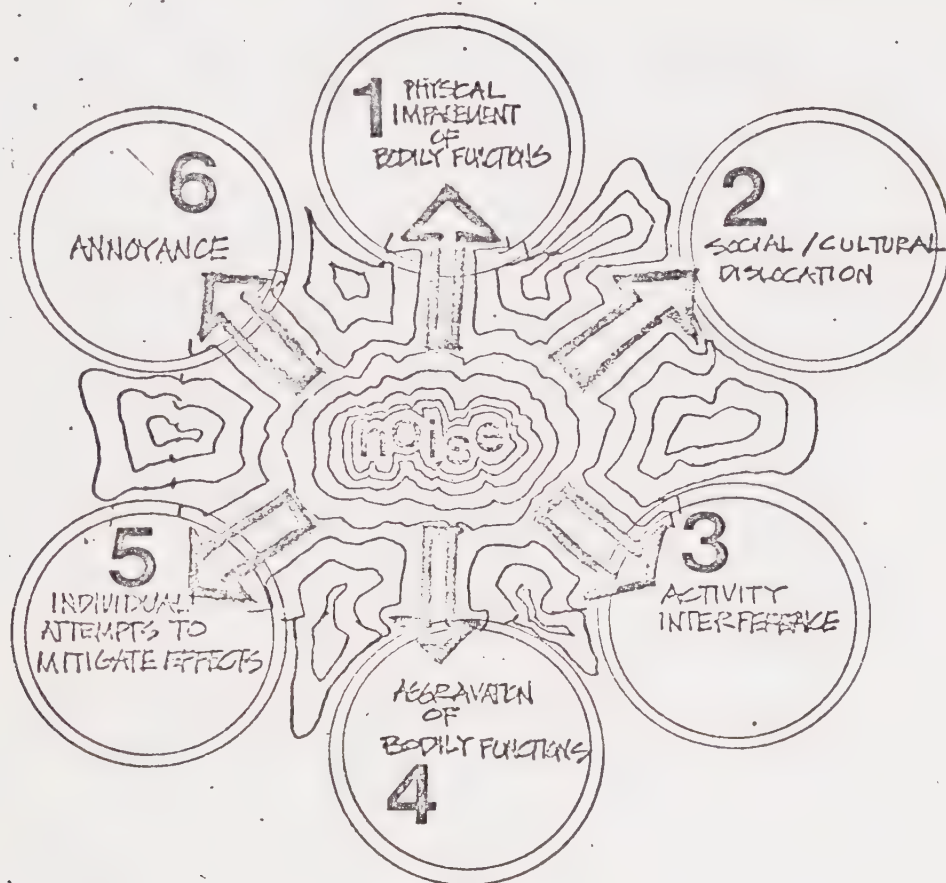
The levels of noise shown in Section II and Section III of the Noise Element are criteria listed for information only and are not proposed as standards for these are levels deemed "requisite to protect health and welfare with an adequate margin of safety". The EPA cautions that the criteria "do not take into account cost or feasibility" and states that "states and localities will approach this information according to individual needs and situations". Suggested standards are contained in the Goals and Policies section of the Noise Element.

The noise impacted area map for reasons of social and economic feasibility shows the impacted zones within a 65  $L_{dn}$  for residential and 75  $L_{dn}$  for commercial and industrial. These levels were chosen as being reasonably possible to achieve even though they are in excess of the recommended levels proposed by EPA.

The third map in this series is a projected noise impact area map. It is based on the assumed traffic flow along major arterials, the San Bernardino Freeway and the proposed Foothill Freeway. The impacted zones are shown based on 1985 expectations. The map has been developed by methods already established by the U. S. Department of Housing and Urban Development and CalTrans using the assumed traffic flow data. The HUD and CalTrans data relate traffic flow and resulting noise level as a function of distance from the traffic flow. The specifics of these methods are found in the appendix.

The noise experienced within our local environment is caused primarily by ground transportation. Under the assumption that future traffic flow will increase and remain the main contributing factor to noise pollution within the city, the 1985 projected noise impact zone map was developed. These maps should be used to identify noise sensitive areas, and within these identified noise sensitive areas specific procedures should be established to mitigate existing noise pollution and avoid its increase.

Noise has six basic effects on society. The problems, both real and imagined can be located within the sphere of one of these six characteristics and each is discussed below.



#### PHYSICAL IMPAIRMENT OF BODILY FUNCTIONS

Among these effects is the permanent impairment of hearing, including the temporary shift of the threshold of hearing (TTS) and presbycusis. The major adverse effect of noise is the partial or complete loss of hearing. Usually, hearing loss will occur only after a prolonged exposure to intensive noise. Single event exposures to extremely loud noises have been known to cause permanent hearing damage. It has been estimated that one-fourth of the present teenage population of Southern California presently suffers from some hearing loss.\* Hearing loss will begin to occur when the 24 hour equivalent noise level  $Leg(24)$  exceeds 70 dBA or more.\*\*

#### SOCIAL/CULTURAL DISLOCATION

One of the long term effects of excessive noise is the reduction in relative desirability of a living environment. This reduction has an economic impact which is difficult to quantify, but leads to the concentration of lower income families in the noise polluted residential areas. Since excessive noise can cause speech interference there is a tendency for persons to become annoyed resulting in a withdrawal from communication and disorganization.\* When the living environment contains excessive noise, the residents who must live there tend to spend as much time away as possible.

\* Footnote San Bernardino County Noise Element p. 8

\*\* Footnote EPA study (bibliography #17)



## ANALYSIS (Cont'd)

disorganization.\* When the living environment contains excessive noise the residents who must live there, tend to spend as much time away as possible.

### ACTIVITY INTERFERENCE

Excessive noise not only produces conscious disturbance and disruption of sleep, but also in some ways is not readily quantifiable. Studies have been made and documented showing that noise which is not sufficient to arouse a person may impair the quality of rest or sleep by shifting the stage of sleep from a deep state (dream state) to a shallower stage. The effect of a transition to shallower stages of sleep can reduce the effectiveness of the rest period. This interference with sleep constitutes a health problem to the extent that it affects human comfort and the physiological changes of state. In order to minimize the sleep interference impact due to noise the interior ambient noise level of a bedroom should approximate 35 dBA but should not exceed 45 dBA.

### AGGRAVATION OF BODILY FUNCTIONS

Contributing to the social problems of society are the secondary effect of those aggravations caused directly by noise. Headache, fatigue, insomnia, frustration, anger, anxiety, muscle tension and even drug consumption \*\* have been directly linked to noise and noisy living environments.

### INDIVIDUAL ACTIONS TO MODIFY THE ENVIRONMENT

Without action by the public jurisdictions or by private industry, the individual who can and will adapt his environment can only treat the receiver and his immediate environment. Installation of stronger, thicker windows and doors will reduce noise intrusion but requires air cooling during the hot summers. Air conditioners will cool the air, but at a cost of more energy and more exterior noise. Homes, businesses, and schools can be acoustically insulated. Many businesses use music or "white noise" to mask out unwanted sounds. But this practice merely increases the ambient noise level. The most effective individual action (but least desirable) is simply to move to another more quiet environment.

### FEELINGS OF ANNOYANCE

Living in an excessively noisy environment can cause irritability, fear, resentment and distraction. The ability to concentrate is reduced. Design of working, studying, and living environments to be in effect, echo chambers increases the dissatisfaction and irritability of those affected by such "live" environments.

### PUBLIC MANAGEMENT OF NOISE

Management of community noise requires that the three main elements of noise be considered. The three elements of noise are the source, the path followed by noise, and the ultimate receiver of the noise.

\* Footnote tyranny pp 107-109, p. 115

\*\* Footnote tyranny p. 61

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ANALYSIS (Cont'd)

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Certainly, making the noise source quieter is the most desirable approach. Logically, it seems most desirable that those who make noise should be those who must pay the costs involved in reducing that noise. The abatement of transportation noise is beyond the powers of the City of Claremont. It is the function of the State and the Federal government to regulate transportation noise sources and the noise generated from various manufactured products.

The City of Claremont and other local governments have the responsibility to regulate and control noise generated from stationary sources (or other sources not controlled by State and Federal governments). In concert with this local responsibility is the responsibility to control and regulate noise sources and their physical relationship to noise receivers.



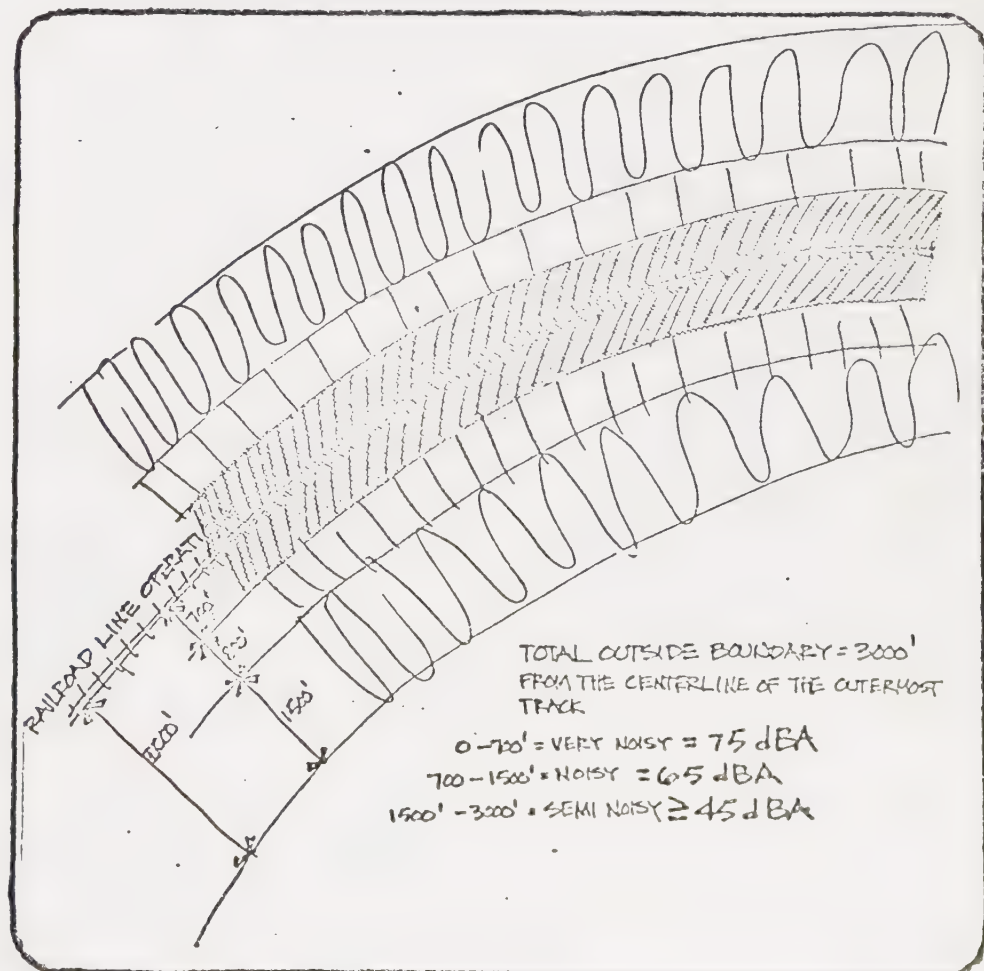
RAILROAD NOISE

Presently within a 24 hour period (7 a.m. - 7 a.m.) five railroad operations are experienced. Of these operations three are passenger operations and two are freight operations. No regularly scheduled operations occur between 12 a.m. and 6 a.m. Only one operation (freight) is scheduled after 5 p.m.

The following sketch, Fig. \_\_\_\_\_, represents the peak noise level anticipated from any given railroad operation, and the relative distances from the source that these noise levels will be experienced.

Railroad operations through the City of Claremont are somewhat limited at the present time. Tracks exist through the older center of the city from the old Pacific Electric Railway Co. and the Santa Fe Railway Co.

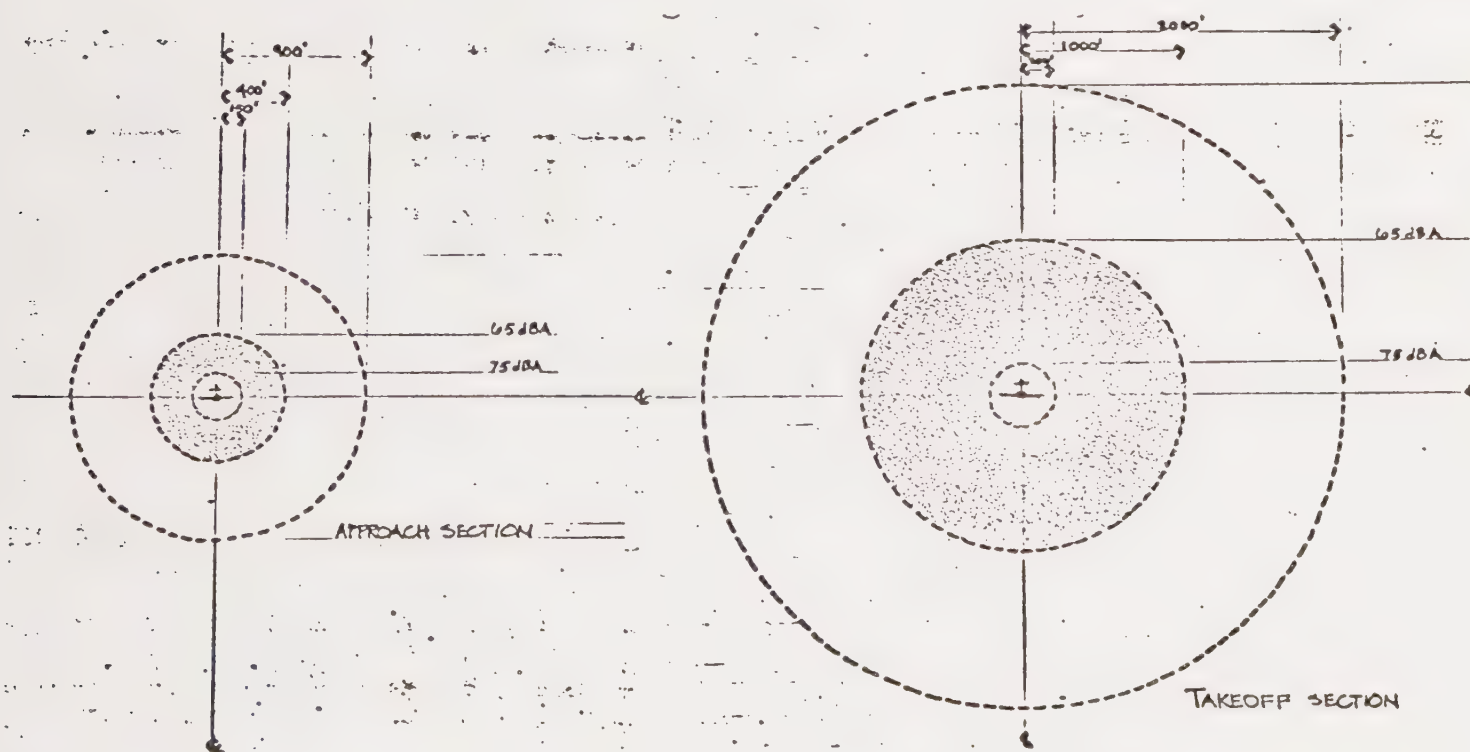
Studies have been made regarding the characteristics of railroad yards and line operations.\* The three divisions or classifications of noise zones have been determined through the use of established peak noise levels.



\* Footnote Wiley Labs report (bibliography # 2.2)

Cable Airport has been defined by San Bernardino County as a general utility airport. The present total operations per month is 8,000 with a projected growth to 12,000 operations per month by 1985.\* This represents a 33% growth over 11 years or at a constant projection 3% per year. This classification of airport, based upon F.A.A. criteria, is further defined as accommodating substantially all general aviation propeller aircraft under 12,500 pounds (gross weight). This type of airport is primarily intended to serve either communities located on the fringe of a metropolitan area or a relatively larger populated community, remote from a metropolitan area. In either case there should be a substantial usage by aircraft having a gross weight of over 8,000 pounds.

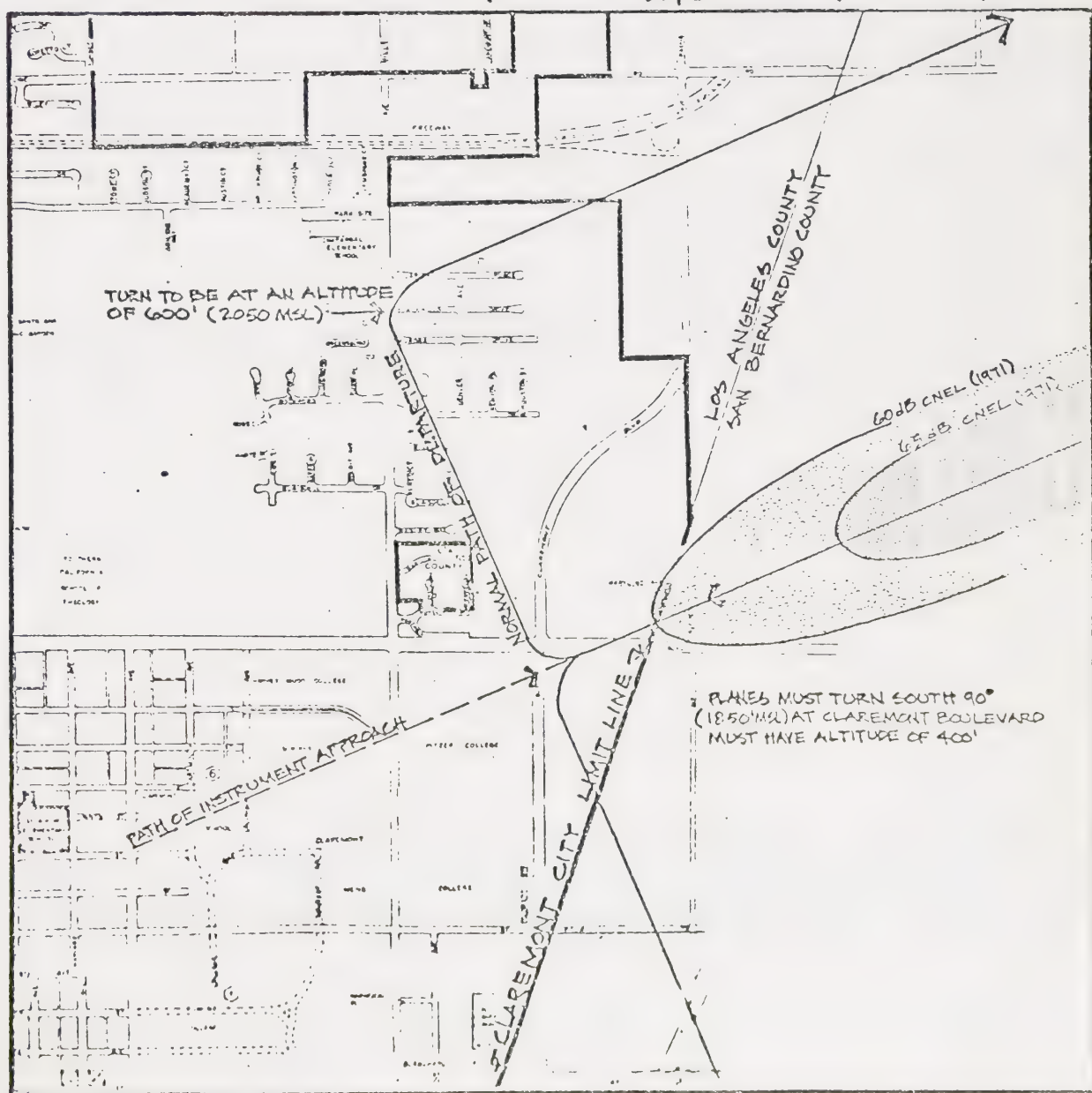
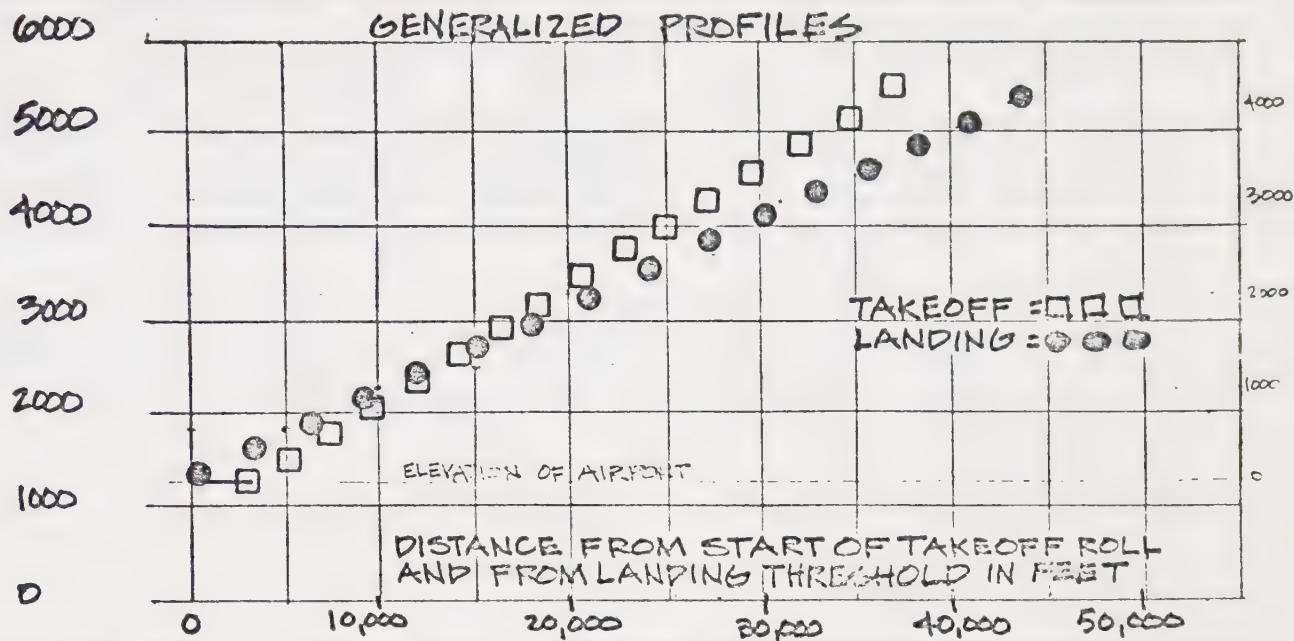
The following illustrations are intended to further detail and explain how the use of Cable Airport affects residents and property within the City of Claremont. Figure \_\_\_\_\_ represents the pattern of sound intensity based on peak noise levels\* surrounding a typical aircraft from the general utility class of airport. It can be seen that as the altitude above ground increases the intensity of sound becomes less. Since the flight path shown on Figure \_\_\_\_\_ is the maximum, it must be assumed that at any point within that maximum distance the peak noise level will occasionally be experienced. By using the sound intensity sections and the minimum altitude permitted it becomes possible to draw hypothetical peak noise contours. These contours are shown on Figure \_\_\_\_\_.



\* footnote San Bernardino County Noise Element p 24 \* p. 216



ELEVATION IN FEET -  
MEAN SEA LEVEL (MSL)



HELICOPTER NOISE

Another significant (albeit intermittent) source of noise within the Claremont planning area are helicopter operations. With the insulation of distance or altitude reduced to a minimum by the characteristically low operating altitudes of such aircraft, a particularly high level of annoyance is achieved. The disruption of normal residential activities will occur with increasing frequency as the use of helicopters becomes more widespread - unless noise limiting standards are developed and design (or operating) modifications are made to these aircraft to reduce the noise levels produced.

In view of the essential nature of their operations little has been done officially to reduce or limit the noise produced by police and/or fire patrol helicopters. As the use of patrol helicopters becomes more widespread, particularly for police purposes, the noise problem will become more acute.\* Noise produced by helicopters is in many cases more intense and more annoying than noise produced by other aircraft types because they perform maneuvers not commonly used in commercial flights, such as rapid climbs, surveillance dives, tight circular flight patterns, hovering at low altitude, etc., that tends to require more power and produce more noise. Also, a large proportion of these operations occur at night and in or near residential areas. Since nighttime is a more critical period, the noise annoyance is more intense. The contrast between helicopter operations at night and the ambient noise level is sharp.

The essential nature of these services provided tends to overshadow noise considerations - so that insufficient attention is given to providing the minimum feasible noise levels that are within the practical limitations of equipment design and the type of flight operation required.

\*There are strong indications that the use of police helicopters will become more general; helicopters are currently also being used in Los Angeles, Chicago, and Denver. See also Rotor and Wing (October 1969) pp 18-25 for articles dealing with the Chicago and Denver programs.



Goals, objectives, and policies are the most important facets of the general plan because they are the "yardstick" of community desires. Identifiable goals and policies provide a consistent and logical tool with which to determine the desirability of any urban development proposal whether in conformance with the general plan or not. The inherent implications of this should tend to increase resident security and satisfaction in future development.

The achievement of a decent home and suitable living environment for every American citizen is a national goal of the Housing Act of 1949, reaffirmed by President Johnson in 1968. The amount of noise experienced is one of those factors which determine the suitability of the living environment. A fundamental goal of the City of Claremont, therefore, is to PRODUCE A DEVELOPMENT GUIDE AND ABATEMENT PROGRAM INTENDED TO PROVIDE THE PEOPLE OF CLAREMONT WITH AN ENVIRONMENT FREE FROM EXCESSIVE NOISE.

As a means to achieving the stated fundamental goal one or more primary objectives should be realized. Successful attainment of the following objectives will provide benchmarks in the progress toward achievement of the fundamental goal. The stated objectives of the City of Claremont therefore are to:

1. Ensure that those areas of the city now free from excessive noise remain so.
2. Ensure that all new generators of noise are treated in a manner to reduce new noise pollution to the maximum practical extent.
3. Reduce to the maximum extent practical, the impacts of noise pollution that currently exists or may exist within the City of Claremont.
4. Ensure that land use relationships in the general plan are compatible with their related noise sensitivities and characteristics.
5. Ensure that the people of Claremont are informed regarding the existing and potential impacts of noise generators.

Policies are fundamental to the development of action programs. The following policies shall lead directly into purposeful and quantifiable programs, and will also be used as a measuring stick to test the various city activities and programs to ensure coordinated efforts. The following policies are related to the objectives in a direct manner and are therefore listed with a numerical relationship for testing and comparisons. It is a policy of the City of Claremont to:

- 1.1 Determine and evaluate the present and anticipated noise levels associated with all major noise generators within the City of Claremont and its sphere of influence that exist now or may exist in the future.
- 1.2 Establish acceptable noise standards requisite to protect the health and welfare of the people of Claremont with an adequate margin of safety.

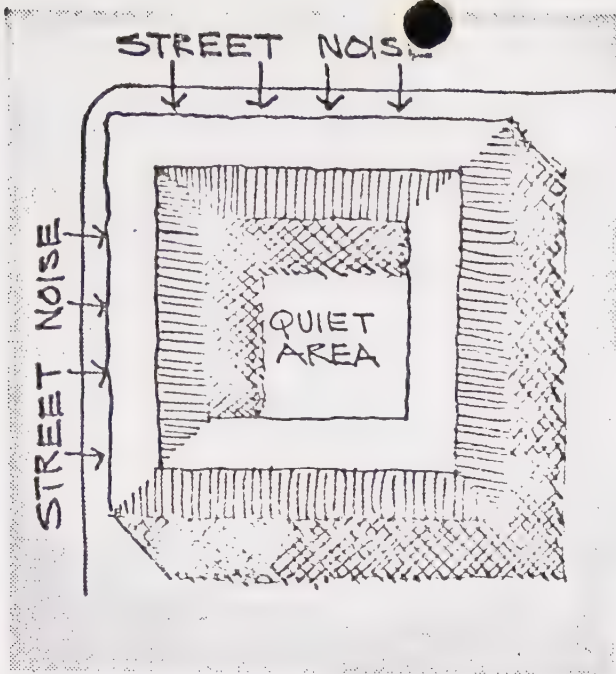
- 1.3 Participate with federal, state, and local government agencies in the development and implementation of noise abatement programs.
- 1.4 Encourage the State Department of Transportation to conduct an active highway noise abatement program including scenic and aesthetic considerations.
- 1.5 Require a quantitative description of the noise levels expected to exist at the property line of any proposed facility which could generate significant levels of noise. This should be part of the environmental impact statement process.
- 2.1 Ensure that noise-sensitive land uses and noise generators are located in a compatible juxtaposition.
- 2.2 Develop and adopt an enforceable noise ordinance that can ensure the protection of public health and welfare with an adequate margin of safety.
- 2.3 Establish noise criteria in the specifications for the purchase of appropriate city equipment.
- 2.4 Modify existing city vehicles and equipment to the extent practical to reduce or eliminate unnecessary noise.
- 2.5 Encourage the installation of noise mitigating equipment and noise attenuation devices at Ontario International Airport and encourage full evaluation of noise impacts on major changes related to operations at Ontario International Airport.
- 2.6 Utilize the standard of a maximum of 75 decibels, exterior day-night average sound level (Ldn) in reviewing the construction or improvement of any new noise generator, including freeways. As few people as feasible should be subjected to average outdoor noise levels from the operation of the new project which are higher than this standard.
- 2.7 Ensure that the Claremont Police Department shall vigorously enforce the State Motor Vehicle Code noise control provisions.
- 3.1 Establish standards for appropriate noise and acoustic insulation for any construction within areas designated as noise-impacted and requiring such measures.
- 3.2 Encourage the operators of Cable Airport and Brackett Field, and the Cities of Upland and Montclair, to ensure that the users of these airports are knowledgeable of and obey the required flight patterns and altitude restrictions.



- 3.3 Encourage the City of Pomona to install appropriate noise reduction equipment on the surveillance helicopters.
- 3.4 Encourage all public and private operators of helicopters within the Claremont planning area to take those steps as may be necessary to modify operational procedures to reduce noise levels produced by helicopters. These efforts should be taken only to the extent that no significant reduction of essential service is experienced.
- 3.5 Encourage other public and private agencies within the Claremont planning area to consider noise criteria in the specifications for the purchase of any new helicopters.
- 3.6 Encourage the City of Upland and the County of San Bernardino to ensure that the area north of Cable Airport is not used as a training and practice area for aircraft.
- 3.7 Restrict future residential development in those areas designated clearly unacceptable for such uses due to health and welfare considerations.
- 3.8 Modify the Municipal Code adding restrictions and standards for the operation of motor vehicles not on the public right-of-way.
- 3.9 Incorporate noise standards into the Land Use and Development Code and provide a strict but practical amortization period for all uses found to be non-conforming and incompatible.
- 3.10 Encourage strongly the State Department of Transportation to build sound reflector walls to protect the residents of South Claremont from freeway noise.
- 3.11 Encourage the City of Pomona to implement noise mitigation measures to eliminate the noise intrusion in the City of Claremont as a result of auto racing and drag strip operations.
- 3.12 Establish a policy of attenuating noise at the source wherever possible and transferring the costs for noise mitigation onto the noise-maker.
- 4.1 Evaluate the proposed Foothill Freeway in light of the probable noise impact and establish a policy toward the design requirement of noise mitigation measures adequate to protect the public health and welfare with an adequate margin of safety; require the noise mitigation measures to be aesthetically compatible with the goals and policies of the city.
- 4.2 Review and modify where appropriate, the land use classification, location, and intensity of all uses in the general plan using criteria appropriate to protect the health and welfare of the people of Claremont with an adequate margin of safety.
- 4.3 Evaluate the desirability of existing and proposed residential uses where the sites are subjected to a clearly unacceptable level of environmental noise due to health and welfare considerations.

- 4.4 Utilize the standard of 65 decibels, day-night exterior average sound level (Ldn) in reviewing new developments in noise-sensitive areas, and in reviewing noise-sensitive land uses in any area, such as residential areas and uses.
- 5.1 Develop a communication link and establish departmental responsibility regarding citizen complaints, inquiries, and abatement activities.
- 5.2 Influence to the degree possible the development and passage of appropriate legislation for better noise control.
- 5.3 Promote increased public awareness concerning the effects of noise.
- 5.4 Require the submission of noise mitigation and energy relationships in the environmental information process.

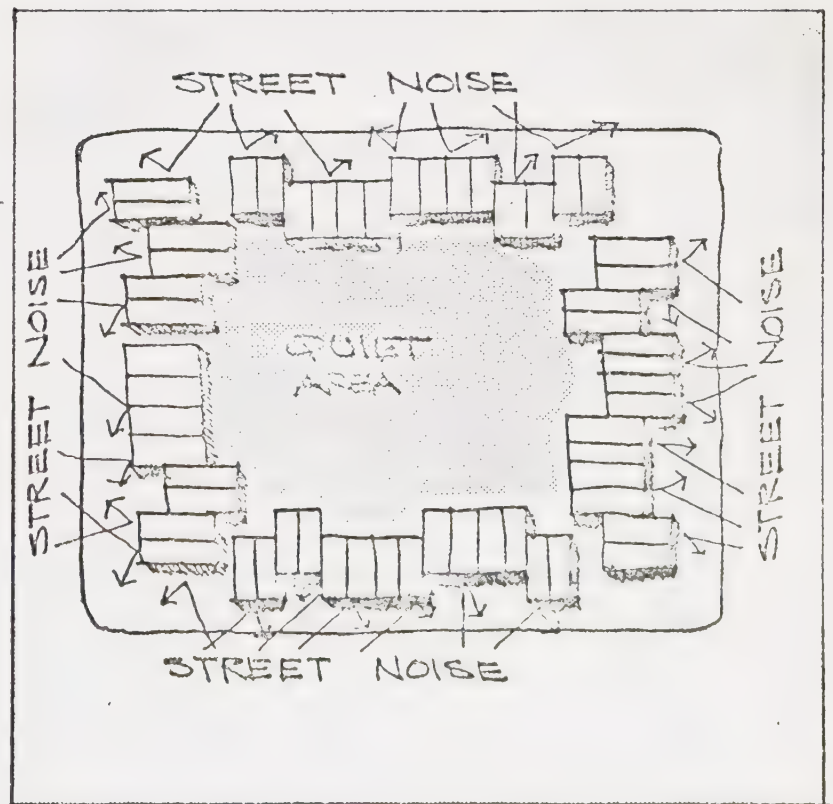




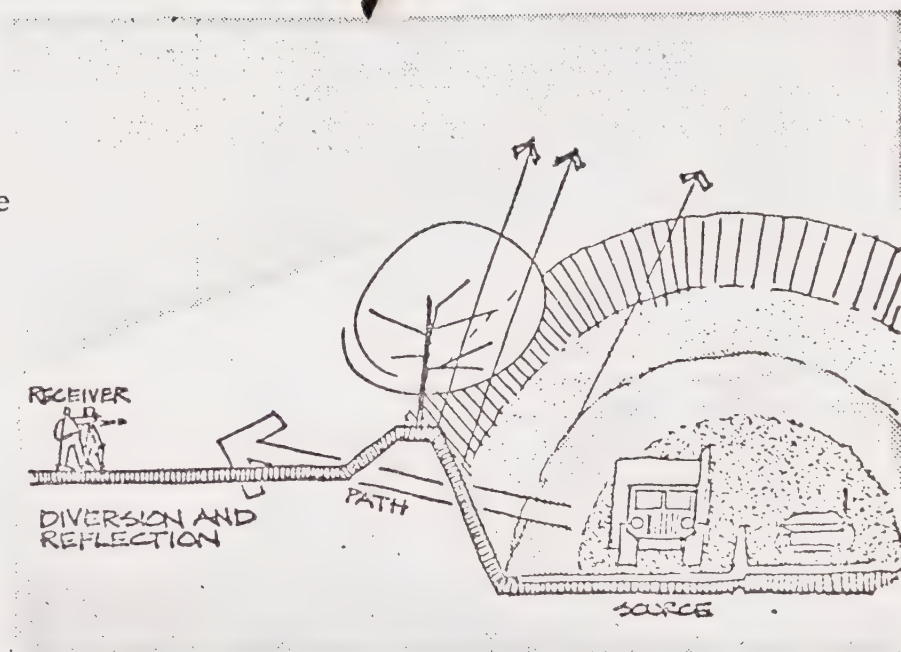
Romans and Meso-Americans utilized the atrium house as a development method to increase privacy. This method of building design also tended to reduce the amount of interior noise from exterior sources by shielding the interior courtyard and thereby providing an "oasis" from the hustle and bustle of daily life.

Design policies of the City utilized in the review of urban developments can affect the amount of noise existing within a development and within a particular dwelling unit. Some basic suggestions of how the public and private sector can mitigate noise problems are noted here. Certainly these simplified notes are not conclusive but should be basic in the consideration, and review of future developments.

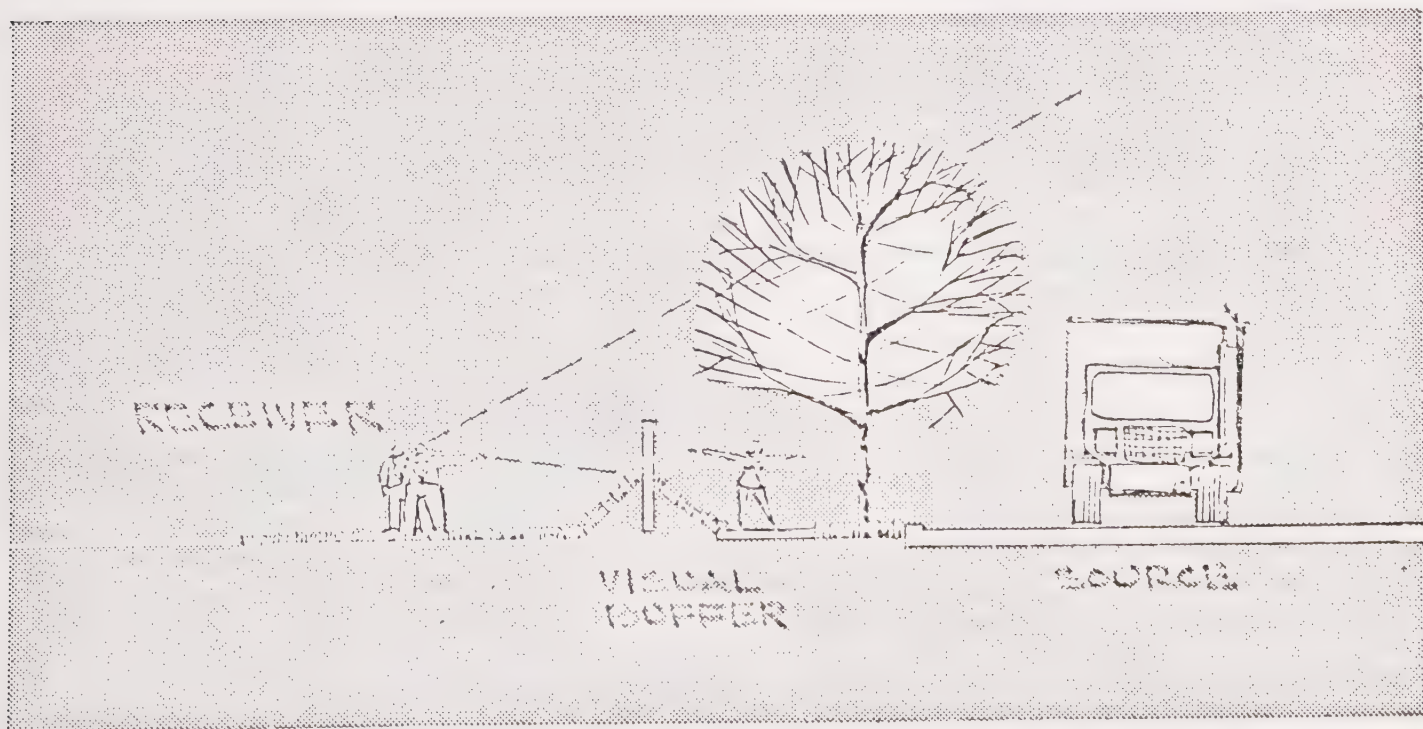
Drawing from history then, and by designing developments along the principle of the atrium house concept, an area of privacy and reduced noise should result. In addition, the more noise sensitive spaces within each dwelling unit could be oriented toward the quiet area rather than toward the noisy street.



There are but three ways to reduce noise in the environment: treat the source, the path noise must follow, or treat the receiver of the noise. A combination of treatments should go a long way toward mitigating noises which cannot be reduced such as tire noises from major transportation lines.



Of course treating the noise source would be the least expensive for the general public at large. In practice this is not so easy and in many cases beyond the power of the City. A variety of methods are used to treat the path over which sound must travel. Earth berms, plantings, walls, large setbacks and other attenuating devices have been found to be successful in reducing the levels of unwanted sound. An additional consideration in the treatment of the noise path is the visual impact. It is important to screen unwanted noise visually to more successfully attenuate the impact of noise on the receiver. The line-of-sight should be broken in screening attempts by whatever means are available - walls, berms, landscaping or a combination of these.





The implementation program is intended to identify the programs available to the City of Claremont which will lead toward a reduction in the level of existing noise experienced by persons within the City of Claremont and, will lead toward a reduction in new or additional noise otherwise anticipated through urban development.

The programs identified in this Section represent the range of actions necessary to achieve the goals stated in this Element. Also noted herein are the areas of responsibility now available to (or pre-empted by) the various governmental agencies. This program, therefore, involved four basic and logical stages of development. First an analysis was made of the existing programs. Then these programs were analyzed to determine if they were effective in abating or mitigating noise pollution. Subsequently recommendations are noted to improve the existing local programs and add new programs only where necessary to achieve the stated goals. Finally, the total range of programs are evaluated regarding their relative effectiveness and priorities are recommended regarding the long-range and short-range actions necessary to implement them.

The primary emphasis of this Section is on those actions available to the City for mitigation and abatement of noise pollution to a level commensurate with health and safety. Suggestions are made regarding future actions on an area-wide or regional level.

#### EXISTING PROGRAMS

The following basic responsibilities and programs have been identified:

#### FEDERAL PROGRAMS:

- A. NCA 1972, EPA to propose noise control regulations for aircraft, amends S611FAA Act of 1958, asserts that FAA and EPA pre-empt local control (U.S.C. 1973).
- B. Walsh Healy Act requires the application of noise standards to all Federal contracts.
- C. O.S.H.A. applies noise standards to businesses affecting interstate commerce.
- D. NCA 1972, gives EPA the authority to prescribe standards for new products such as:
  - 1. construction equipment
  - 2. transportation equipment
  - 3. any motor or engine
  - 4. electrical/electronic equipment
  - 5. label noise emitting or noise abating equipment
- E. NCA 1972, regulates noise from surface carriers and motor vehicles engaged in interstate commerce.
- F. Federal Aid Highways Act, P.L.91-605, directs the Secretary

of Transportation to prepare standards for highway noise control (promulgated by PPM 90-2 of February 1973).

STATE PROGRAMS:

- A. Subchapter 6 Noise Standards, Department of Aeronautics: Regulates noise of all aircraft operations to the extent not already limited by Federal law.
- B. Motor Vehicle Code regulates noise limits for new vehicles and all motor vehicle operation.
- C. California Streets and Highways Code S216 regulates noise within schools near freeways.
- D. The Division of Industrial Safety publishes noise regulations.
- E. S415 of the California Penal Code prohibits loud and unusual noise that disturbs the peace.
- F. Environmental Quality Act encourages local agencies to control environmental quality.
- G. Harbor and Navigation Code S2:654.05 regulates noise emission from motor boats in or upon inland waters.
- H. California Government Code S65302(g) requires every County or City General Plan must include "a noise element in quantitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These shall include but are not limited to: (1) highways and freeways (2) ground rapid transit systems (3) ground facilities associated with all airports operating under a permit from the State Department of Aeronautics.

CITY PROGRAMS:

- A. Chapter 5, Part 3, S532A of the Land Use and Development Code: Noise (to be added later)
- B. Ordinance 73-2, amending the Building Code adding S1716 and S1717 relating to sound and thermal insulation.
- C. S4.16 Municipal Code regulating destructive barking of dogs.
- D. S14.15 Municipal Code regulating the use of loud noises relating to advertising - peddlers.

EVALUATION OF EXISTING PROGRAMS

The federal programs have resulted in several studies within the Department of Transportation including a determination of the levels of responsibility in noise abatement (public vs. private), a determination of the need for federal standards and regulations, and an assessment



of the transportation noise abatement problems. The Federal Aid Highways Act was amended in 1970 by P.L. 91-605 directing the Secretary of Transportation to promulgate standards for highway noise levels compatible with different land uses and not to approve any location unless adequate noise control measures have been implemented. These standards were published in the DOT Policy and Procedure Memorandum 90-2 on 8 February 1973.

The NCA requires that the Environmental Protection Agency be responsible for making regulations to govern noise emission from the operation of surface carriers and motor vehicles engaged in interstate commerce. State and local governments are prohibited from establishing noise emission limits different from the applicable federal standards unless the administrator of EPA finds local conditions necessitate different regulations. On 27 July 1973 the EPA published proposed noise emission regulations for motor carriers in the Federal Register.

The NCA also gives the EPA authority to set standards limiting the noise generating characteristics of any product or class of products which has been identified as a major source of noise in the following: construction equipment, transportation equipment (including recreational vehicles), any motor or engine, electrical or electronic equipment. In no instance can state or local governments set noise standards different from those set by the EPA - unless such standards regulate the use, operation or movement of products (as opposed to their manufacture).

The Walsh-Healy Public Contracts Act and the Occupation Safety and Health Act (OSHA) prohibit industrial noise at levels that cause hearing loss. Maximum allowable exposure time of 8 hours for noises above 90 dB(A) were established by these acts. These acts do not pre-empt state or local government controls. The Department of Housing and Urban Development (HUD) Circular 1390.2 contains noise regulations establishing noise exposure policies and standards to be used in the approval or disapproval of all HUD assisted projects.

The California Environmental Quality Act (CEQA) declares that state policy requires governmental agencies at all levels to develop standards and procedures necessary to provide the people of California freedom from excessive noise. Section 24180-81 of the California Health and Safety Code established a State Office of Noise Control to provide technical assistance to local jurisdictions in order to help combat noise pollution.

The vehicle noise abatement program to date has consisted of enforcement of maximum new vehicle noise emission standards and the regulation of vehicle operation. The state has the responsibility for setting noise emission standards for all motor vehicles subject to registration. The California Highway Patrol has prime responsibility for enforcing these standards. Local police can also enforce these standards. Section 216 of the California Streets and Highways Code requires the state to reduce the noise levels from freeways in certain kinds of schools.

IMPLEMENTATION

This noise is measured in the classrooms, libraries, and multi-purpose rooms adjacent to a freeway. If the noise level generated by normal traffic exceeds the standards of this section the state is responsible for noise abatement in the affected rooms.

Any motorboat operated on or over inland waters must conform to the noise levels set by Section 2:654.05 of the California Harbor and Navigation Code (with special temporary exceptions by permit only).

The State Department of Housing and Community Development has passed regulations requiring cities and counties to define a 60 dB CNEL contour and implement noise insulation and mitigation standards of the regulations for all new residential uses (other than single family detached dwellings) impacted by this level (or more) of ambient noise.

In summary, the State of California has adopted the nation's first state aircraft noise abatement law, as well as the first acoustical standards limiting truck, auto, and motorcycle noise. In addition, the California League of Cities has developed a model noise ordinance to serve as a guide in the development of local noise ordinances. The state motor vehicle standards could result in significant reductions in future noise. The City of Claremont does not now regulate noise emission within the Land Use and Development Code but intends to do so (see Chapter 5, Part 3, S532A).

The sum of all the noted programs will certainly achieve a measure of noise mitigation and abatement. There are but three ways to mitigate noise: at the source, along the path noise must follow, or at the point where the noise is received. The above noted Federal, State and Local controls regulate noise primarily at the source - which tends to be the most economical regarding economic and social costs. Most of these controls will have little or no effect unless enforced at the local level.

Options available to the City of Claremont to regulate and control noise pollution include the enactment of off-road vehicle noise limits (when directed at the operator). The City could designate "quiet zones" by simply banning noisy vehicles from certain roads. The State of California has retained the authority to require off-road vehicles to be equipped with an adequate muffler (one that meets the requirements of S38245 and S38280 of the Motor Vehicle Code). In addition, the City may enact noise regulations that will promote the public health and welfare as an exercise of the police power (zoning controls) so long as these regulations do not conflict with general laws (see SV11, Article XI, California State Constitution). The City of Claremont can enact regulations setting limits to noise emissions (from stationary and some mobile) sources which cross property lines. Such performance standards are meant to apply to noise-generating apparatus or activities within a particular area



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IMPLEMENTATION

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and should not be confused with the new product standards of the Environmental Protection Agency. In addition, the City may require license and permit provisions to limit or require compliance with performance standards as a condition to the installation or operation of equipment. Curfews could be established regulating the hours of permitted noise-generating activities, prohibiting these activities during a certain period (usually at night).

Upon adoption of the Noise Element with the required contours, the regulations of the State Department of Housing and Community Development concerning noise mitigation and abatement shall be implemented. (see the appendix)

PROGRAM OF ACTION FOR NOISE MITIGATION

The following program is intended to develop the minimum controls with the minimum impact necessary to protect the public health and welfare with an adequate margin of safety. Control of noise at the source has been shown to be the most economical method of noise pollution abatement and puts the cost of noise mitigation upon the noise-generator. This control, therefore, should be exercised in a noise ordinance to regulate the amount and limits of noise intrusion beyond the property line for all uses of land within the City.

To implement the noise ordinance enforceable standards shall be established which are consistent with quality of life goals of the City. An Environmental Protection Agency task group has recommended the following maximum levels:<sup>1</sup>

RECOMMENDED MAXIMUM AVERAGE OUTDOOR NOISE LEVELS

- |                                  |             |                   |
|----------------------------------|-------------|-------------------|
| 1. To prevent hearing damage     | 80 Decibels | L <sub>dn</sub> * |
| 2. To permit normal conversation | 63 Decibels | L <sub>dn</sub>   |
| 3. To permit normal sleep        | 60 Decibels | L <sub>dn</sub>   |
| 4. To prevent annoyance          | 60 Decibels | L <sub>dn</sub>   |

L<sub>dn</sub> = day-night average sound level.

To centralize and coordinate noise abatement and mitigation a department within the City administration should be given the overall responsibility for noise programs. The existing building code, subdivision ordinance, zoning ordinance and municipal code should be reviewed by this department and a coordinated set of recommended changes should be developed. The department responsible for noise abatement should develop the necessary administrative and technical procedures for noise monitoring including coordination with other governmental agencies.

An annual review of the noise element together with an annual report regarding noise abatement and mitigation efforts should be transmitted to the City Council including but not limited to a summary of the effectiveness of the noise mitigation program based upon the noise survey of December 1974. This report should be the responsibility of the department responsible for noise abatement.

Any standards and noise limits developed should be reviewed and compared to others on the regional level to assure consistency (or intended variation). Specific problem areas should be identified by an overlay zone requiring special noise mitigation measures and special review by the City prior to the granting of any building permit, zone change, or other development approval. Studies should be made to determine the most effective noise mitigation methods and procedures to be utilized in capital expenditures such as vehicles, equipment, construction and design of roads and other physical facilities.

1. Environmental Protection Agency, Impact Characterization of Noise Including Implications of Identifying and Achieving Levels of Cumulative Noise Exposure, July 1973.



In concert with the above programs the City should encourage and applaud the adopted program of Los Angeles County of "...establishing a central authority within county government with the responsibility for noise problems and programs." Request Los Angeles County to implement its adopted policy to "Coordinate with, and assist, the various cities in dealing with the problem of noise and provide leadership and technical expertise when requested by other jurisdictions." The City should also encourage Los Angeles County to promptly implement its adopted policy of monitoring "...the programs and policies of the responsible special districts, regional, state, and federal agencies in order to insure that they effectively exercise their mandate to control the sources of noise for new, proposed, or existing transportation facilities, vehicles, or aircraft." Request that the county assume a leadership position in disseminating information regarding this monitoring to its member cities, to the Southern California Association of Governments and to the California League of Cities.





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2. Certain Legal Aspects of Required Soundproofing in High Noise Areas, Feb. 1970, Clary, Gottslieb, Stein and Hamilton, Pub. National Technical Information Service.
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4. Metropolitan Aircraft Noise Abatement Policy Study, Goodfriend, Ostergard Associates, Feb. 1970, National Technical Information Service.
5. Metropolitan Aircraft Noise Abatement Policy Study, 1970, Tri-State Transportation Commission for U. S. Department of HUD and U. S. Department of Transportation, National Technical Information Service.
6. Outdoor Noise and the Metropolitan Environment, A Case Study of Los Angeles with Special Reference to Aircraft, 1970, Melvin C. Branch et al, Department of City Planning, Los Angeles, California, Planning Advisory Service, ASPO.
7. Guidelines for Community Noise Evaluation, J. H. Wiggins Co., Jan. 1973, J. H. Wiggins Co.
8. Noise Control Legislation and Enforcement, Sept. 1971, Randall L. Hurlburt, Environmental Standard Division, City of Inglewood, California.
9. Environmental and Economic Analysis of an Accoustical Treatment Ordinance, proposed for the City of Inglewood, June 1972.
10. Noise Pollution, The Unquiet Crisis, Clifford R. Ragdum, 1971, University of Pennsylvania Press, Philadelphia, Pa.
11. The Tyranny of Noise, Robert Alex Barron, 1970, St. Martin's Press, New York.
12. In Quest of Quiet, Henry Still, 1970, Stackpole Books, Harrisburg, Pa.
13. People and Buildings, edited by Robert Guteman, 1972, Basic Books, Inc., New York.
14. Planning Cities, Frederick H. Baer, Jr., editor, 1970, American Society of Planning Officials.



PART I BASIC REFERENCE (Cont'd)

15. The Freeway in the City, Urban Advisors to the Federal Highway Administrator, Michael Rapuano, Chairman, 1968, U. S. Government Printing Office, Washington, D.C.
16. Design with Nature, Ian L. McHarg, 1969, Natural History Press, Garden City, New York.
17. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, U.S. E.P.A., Washington, D.C., March 1974
18. Description of Natural Plant and Animal Communities in and around the City of Claremont, Dr. Bill Wirtz, et al, June, 1971, Pomona College, Claremont, California.
19. Report of the Environmental Resources Task Force to the Claremont City Council, Walter P. Taylor et al, June, 1971, Claremont, California.
20. The General Plan, City of Claremont (as amended), 1974.
21. Impact Characterization of Noise Including Implications of Identifying and Achieving Levels of Cumulative Noise Exposure, Environmental Protection Agency, July, 1973.
22. Assessment of Noise Environments Around Railroad Operations, Wyle Laboratories Report WCR 73-5, July 1973.
23. The Transportation System of Statewide Significance (discussion draft) CALTRANS, November, 1974.
24. Motor Vehicle Noise, A Report to the ASSEMBLY COMMITTEE ON TRANSPORTATION. Technical Advisory Panel on Motor Vehicle Noise, February 1973.



PART II RELATED PUBLICATIONS USED AS REFERENCES

1. Noise Element, draft, July 1974, San Bernardino County, Environmental Improvement Agency, Planning Department.
2. Noise Element, draft, Department of Regional Planning, Los Angeles County, July 1974.
3. Noise Element, Millbrae General Plan.
4. Noise Element, Cerritos General Plan.
5. Environmental Noise Policy Study, C.P.O. San Diego, California, April 1974.
6. Outline of the Palo Alto Noise Control Program, August 23, 1972.
7. An Environmental Conservation Element for the Los Angeles City General Plan (a staff working paper), August 1970, Dept. of City Planning.

PART III PERSONS CONSULTED

1. Mr. Robert Gay, Planner, Environmental Standards Division  
City of Inglewood
2. Mr. Patrick Man, Planner, Environmental Standards Division  
City of Inglewood
3. Mr. David R. Lewis, Planner, Environmental Improvement Agency  
Planning Department, San Bernardino County
4. Mr. James Apple, McDonnell-Douglas Corporation
5. Mr. Edward Hartouni, Planning Consultant
6. Owen Menard and Associates  
Planning Consultants
7. Mr. Jerold Niesler  
Mr. John Byers  
Orange County Health Department

Additional Information

1. A Workshop on the Noise Element  
5 June 1974 sponsored by the Southern California Association  
of Governments.

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